

## REMARKS

Upon entry of the amendment made herein, claims 1, 2, 4-7, 10-17, 19-27, 29-32 and 37 are pending in the application. Claims 3, 8-9, 28, 31 and 33-36 have been cancelled herein without prejudice or disclaimer. Claim 18 remains cancelled herein. Claims 1, 5, 13-15, 19, 29, 30 and 32 are amended herein. Claim 37 has been added herein. Support for the amendments made herein and new claim can be found at least at page 8, lines 7-9; at page 9, lines 1-4; at page 24, lines 9-18; at page 26, lines 9-20, and in claims 3 and 8-9 as originally filed. No new matter is added.

### Claim Objections

The Examiner objected to claim 5 because it contains improper Markush language. Applicants have amended claim 5 to recite "consisting of." Applicants submit that this objection has been overcome and should be withdrawn.

### Rejections under 35 U.S.C. §112, First Paragraph

The Examiner has rejected claims 1-17 and 19-36 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner indicates that the specification does not disclose naturally-occurring vegetative raw matter as a raw material for the claimed process. Applicants disagree.

The specification describes a variety of starting materials, *i.e.* wood, or other agricultural waste, such as the stalks of cotton plants or sunflowers which are naturally occurring and are further described as vegetative material and raw material. (*See*, Specification at page 7, lines 1-7). The disclosure also teaches that virtually any type naturally-occurring cellulose containing material from wood of trees to the stalks of wheat or other cereal crops or grasses can be utilized in the instant invention. (*See*, Specification at page 12, lines 21-23). Further, the preferred raw material for use in the claimed process is agricultural waste, such as the stalks or stems of crops such as corn, cotton, banana and sunflower. (*See*, Specification at page 12, line 23 through page 13, line 2). Moreover, the specification teaches that the process is designed to carry out a series of well defined steps for reducing *vegetative raw material* into dried blocks of fine cellulose (*emphasis added*). (*See*, Specification at page 10, lines 20-22).

Additionally, the schematic in Figure 1a indicates that step 1 includes preparing the raw material, and step 2 comprises initially breaking apart the raw material. (See, Specification at Figure 1a). The various raw materials disclosed and described in the specification to be included in the claimed process are broken apart into pieces, using the high pressure water jets. (See, Specification at page 7, lines 1-7; at page 12, lines 21-23 and line 23 through page 13, line 2). As described in Figure 1 and throughout the specification, the starting materials or vegetative raw materials are broken apart into small pieces using the claimed process to the point where the vegetative raw matter is dried into blocks of fine cellulose pulp. (See, Specification at page 10, lines 20-22 and Figure 1a).

Applicants submit that the specification discloses a variety of naturally-occurring vegetative raw material to be used in the claimed process. Reconsideration and withdrawal of this rejection is requested.

The Examiner has rejected claims 1-17 and 19-36 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner indicates that the instant specification does not recite the phrase "not damage," when referring to the cellulose fibers as recited in claim 1. Applicants disagree. Applicants submit that the specification teaches that the use of high pressure fluid and screens with openings of decreasing size results in a gradual break apart of the plant tissue without damaging the fibers composing the tissue. (See, Specification at page 17, lines 1-3). Reconsideration and withdrawal of this rejection is requested.

#### **Rejection under 35 U.S.C. §112, Second Paragraph**

The Examiner has rejected claims 1-17 and 19-36 under 35 U.S.C. §112, second paragraph, for being indefinite. Specifically, the Examiner indicates the recitation of "naturally-occurring vegetative raw matter," with respect to the meaning of "raw" or "naturally-occurring" is unclear. (See, Office Action at page 4). Applicants disagree.

As discussed above, Applicants submit that the meaning of "raw" is described throughout the specification. Specifically, the starting material comprises wood and other agricultural waste, such as stalks or stems of crops such as corn, cotton, and wheat, which the specification describes as vegetative raw material. (See, Specification at page 7, lines 1-7 and at page 12, lines 2-4). The specification further describes the materials to be used in the claimed process proves as any cellulose containing material from wood to stalks of wheat. (See, Specification at page 12, lines 20-23). Further, the preferred *raw* material is agricultural waste, such as the stalks or stems of crops such as corn, cotton, banana and sunflower (*emphasis added*). (See, Specification at page 12, line 23 through page 13, line 2). A person of ordinary skill in the art would readily understand the meaning of the word "raw" from the disclosure in the specification and as applied to the claims.

Moreover, the starting material used as defined is any material containing cellulose such as wood and other agricultural waste, which as discussed above, includes stalks or stems of crops such as corn, cotton, banana and sunflower. (See, Specification at page 12, line 23 through page 13, line 2). Further, the specification exemplifies that the vegetative raw material can be the stalks of crops grown on a large scale, which are normally left in the field to be burned, plowed-under or otherwise disposed of after the harvest. (See, Specification at page 13, lines 2-4). It is estimated that 10% of the amount of paper used in Israel could be produced by the claimed process from starting materials that normally would have been utilized. (See, Specification at page 13, at lines 4-12).

A person of ordinary skill in the art would readily understand that these materials are naturally-occurring not only from the description of the starting materials but also from the advantages of using the claimed process. Reconsideration and withdrawal of the rejection is requested.

### **Rejections under 35 U.S.C. §102**

The Examiner has rejected claims 35-36 under 35 U.S.C. §102(b) as anticipated by, or, in the alternative, under 35 U.S.C. §103(a) as being obvious over CA Patent No. 2,113,737 ("Law"). The Examiner indicates that Law discloses methods of making a pulp from waste cellulose material, and that the pulp contains single cellulose fibers. (See, Office Action at page 5). Applicants have cancelled claims 35-36, therefore this rejection is moot and should be withdrawn.

### **Rejections under 35 U.S.C. §103**

The Examiner has rejected claims 1, 2, 4-10, 12, 17, 19, 28 and under 35 U.S.C. §103(a) as being unpatentable over Law. The Examiner indicates that Law discloses using water jets with pressures between 1 and 5000 psi (0.068 atm -340 atm) to break up vegetative matter (cellulosic materials) into individual fibers by placing the material on screens with successively smaller openings ranging from 2 mesh to 200 mesh. (See, Office Action at page 6). Applicants traverse this rejection with respect to the claims as amended herein.

Specifically, Applicants have amended claim 1 to include the limitations of claim 3, *i.e.* to further comprise sorting of fibers of cellulose by diameter; sorting and aligning the fibers of cellulose, said alignment being performed by passing said fibers of cellulose through a grating of a predetermined slit width, so as to allow fibers of cellulose with a diameter of said predetermined slit width to pass therethrough, thereby aligning said fibers of cellulose. Applicants have also amended claim 1, from which the remaining rejected claims depend, to require that the liquid is water and that the pressure of the water is between 500 - 1500 atmospheres. Claim 3 was not subjected to the instant rejection. Specifically, Law does not teach the limitations of sorting and aligning as recited in amended claim 1. Nor does Law teach the 500-1500 atmospheres of pressure limitation. This rejection should be withdrawn.

The Examiner has also rejected claims 3, 11, 13-16, and 30-34 under 35 U.S.C. §103(a) as being unpatentable over Law in view of US Patent No. 5,316,150 ("Fisher") and US Patent No. 3,334,578 ("Lalonde"). The Examiner indicates that the teachings of Law are as discussed above and that Fisher teaches a method for separating long and short fibers using grates which

are usable for different purposes and that bailing the fibers of Fisher can be accomplished by pressing the fibers in a bailing press as disclosed by Lalonde (*See*, Office Action at pages 8-9). Applicants traverse the rejection with respect to the pending claims as amended herein.

In order to establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

For clarity purposes, Applicants are describing the teachings of the cited references individually but are traversing the rejection with respect to the combination of these references as described in further detail below.

As articulated above, Law is fatally defective. Law does not teach or suggest a method of sorting of fibers of cellulose by diameter; sorting and aligning the fibers of cellulose, said alignment being performed by passing said fibers of cellulose through a grating of a predetermined slit width, so as to allow fibers of cellulose with a diameter of said predetermined slit width to pass therethrough, and thereby aligning said fibers of cellulose as required by amended claim 1.

Further, Law merely teaches processing wastepaper into individual fibers, whereas the claimed invention processes naturally-occurring vegetative raw matter. The pressures claimed in the instant invention are higher than the range taught in Law. The instant application teaches that when using a hard material like pine wood, the pressure of the water must be between 500-1500 Atm, which surpasses the pressures of between 1 and 5000 psi (0.068 - 340 Atm) taught by Law. The instant claims recited that the pressure of water be between 500 and 1500 atmospheres, higher than Law and necessary to process the range of naturally-occurring vegetative raw material as presently claimed.

Neither Fisher nor Lalonde cure these deficiencies of Law.

Fisher merely teaches a method of separating bast fibers from core fibers using a series of rotating cylinders, an air suction mechanism, and high powered air jets. Specifically, the conveyers shake and throw the fibers vigorously, such that the heavier core fibers fall through the openings and are carried away leaving the bast fibers on top of the conveyers and blades, which utilizing the air suction mechanism float towards the next stage of the process, resulting in further separation. (*See*, Fisher at column 4, lines 2-5 and at column 5, lines 7-13). Thus,

Applicants submit Fisher's use of air jets teaches away from the instant invention's use of high pressure water jets. Specifically, the bast fibers of Fisher would not be able to float over the top of the blades if high pressure water jets, as required by the claimed process, were used as the water would weigh down the bast fibers and they would not be separated from the core fibers.

Lalonde does not cure the deficiencies of Law or Fisher. Lalonde merely teaches a machine for baling paper pulp.

The combination of Fisher and Lalonde do not teach or suggest using high pressure water jets at pressures between 500 and 1500 atmospheres to break apart naturally-occurring vegetative raw matter as well as initially sorting of fibers of cellulose by diameter; finally sorting and alignment of the fibers of cellulose, said alignment being performed by passing said fibers of cellulose through a grating of a predetermined slit width, so as to allow fibers of cellulose with a diameter of said predetermined slit width to pass therethrough, and thereby aligning said fibers of cellulose. Thus, the combination of Law in view of Fisher and Lalonde do not teach or suggest all the limitations of claim 1, from which claims 11, 13-16 and 30-34 depend.

As such, reconsideration and withdrawal of the rejection is requested.

The Examiner has rejected claims 20-26 under 35 U.S.C. §103(a) as being unpatentable over Law in view of US Patent No. 5,055,159 ("Blanchette"). The Examiner indicates that Blanchette teaches a biological process, in which vegetative matter was placed in reactors containing water and an inoculum of a particular fungus, *i.e.* a delignification by microorganism process, which would have been obvious to combine with the pulping methods taught by Law. (See, Office Action at pages 9-10). Applicants submit that claims 20-26 depend from amended claim 1 and therefore necessarily contain all the limitations of claim 1. Applicants traverse the rejection with respect to the pending claims as amended herein.

Law is fatally defective as discussed above. Blanchette does not cure the deficiencies of Law. Blanchette merely teaches the biological pre-treatment of wood chops for making pulp through the use of fungus. (See, Blanchette at Column 3, lines 32-48). Blanchette does not teach or suggest using high pressure water jets at pressures between 500 and 1500 atmospheres to break apart naturally-occurring vegetative raw matter as well as initially sorting of fibers of cellulose by diameter; finally sorting and alignment of the fibers of cellulose, said alignment

being performed by passing said fibers of cellulose through a grating of a predetermined slit width, so as to allow fibers of cellulose with a diameter of said predetermined slit width to pass therethrough, and thereby aligning said fibers of cellulose. Thus, the combination of Law in further view of Blanchette does not teach or suggest all of the limitations of amended claim 1, from which claims 20-26 properly depend, as is required to establish a *prima facie* case of obviousness.

Reconsideration and withdrawal of the rejection is requested.

The Examiner has rejected claim 27 under 35 U.S.C. §103(a) as being unpatentable over Law in view of US Patent No. 5,013,404 ("Christiansen"). The Examiner indicates that Christiansen teaches a stabilized hydrogen peroxide for use as a bleaching agent, which is not taught in Law. (See, Office Action at page 10). Applicants submit that claim 27 depends from amended claim 1 and therefore necessarily contains all the limitations of claim 1. Applicants traverse the rejection with respect to the pending claims as amended herein.

Law is fatally defective as discussed above. Christiansen does not cure the deficiencies of Law. Christiansen merely teaches a process for alkaline hydrogen peroxide bleaching of mechanical wood pulp in a stabilized bleach solution. (See, Christiansen at Abstract). Christiansen does not teach or suggest using high pressure water jets at pressures between 500 and 1500 atmospheres to break apart naturally-occurring vegetative raw matter as well as initial sorting of fibers of cellulose by diameter; final sorting and alignment of the fibers of cellulose, said alignment being performed by passing said fibers of cellulose through a grating of a predetermined slit width, so as to allow fibers of cellulose with a diameter of said predetermined slit width to pass therethrough, and thereby aligning said fibers of cellulose. Thus, the combination of Law in further view of Christiansen does not teach or suggest all of the limitations of amended claim 1, from which claims 27 properly depend, as is required to establish a *prima facie* case of obviousness.

Reconsideration and withdrawal of the rejection is requested.


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### CONCLUSION

On the basis of the foregoing amendment and remarks, Applicants respectfully submit that the pending claims are in condition for allowance and a Notice of Allowance for the pending claims is respectfully requested. If there are any questions regarding this application that can be handled in a phone conference with Applicants' Attorneys, the Examiner is encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,

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